**Chapter 2: The Chemistry of Life**

**State Standards**

**Central Concept:** Chemical elements form organic molecules that interact to perform the basic functions of life

1.1 Recognize that biological organisms are composed primarily of very few elements. The six most common are Carbon, Hydrogen, Nitrogen, Oxygen, Phosphorus, and Sulfur.

1.2 Describe the basic molecular structures and primary functions of the four major categories of organic molecules (carbohydrates, lipids, proteins, and nucleic acids).

1.3 Explain the role of enzymes as catalysts that lower the activation energy of biochemical reactions. Identify factors, such as pH and temperature, that have an effect on enzymes.

Key Terms

Atom

Nucleus

Proton, Neutron, Electron

Element

Isotope

Compound

Ionic Bond

Ion

Covalent Bond

Molecule

Van der Waals Forces

Hydrogen Bond

Cohesion

Adhesion

Mixture

Solution

Solute

Solvent

Suspension

pH Scale

Acid

Base

Buffer

Monomer

Polymer

Carbohydrate

Monosaccharide

Lipid

Nucleic Acid

Nucleotide

Protein

Amino Acid

Chemical Reaction

Reactant

Product

Activation Energy

Catalyst

Enzyme

Substrate

**You should be able to:**

1. Identify the three subatomic particles found in atoms.
2. Explain how all of the isotopes of an element are similar and how they are different.
3. Explain how compounds are different from their component elements.
4. Describe the two main types of chemical bonds.
5. Discuss the unique properties of water.
6. Differentiate between solutions and suspensions.
7. Explain what acidic solutions and basic solutions are.
8. Describe the unique qualities of carbon.
9. Describe the structures and functions of each of the four groups of macromolecules.
10. Explain how chemical reactions affect chemical bonds.
11. Describe how energy changes affect how easily a chemical reaction will occur.
12. Explain why enzymes are important to living things.

**You should know the difference between:**

* Proton, neutron, and electron
* Element and isotope
* Ionic bond and covalent bond
* Cohesion and adhesion
* Solution and suspension
* Acid and base
* Monomer and polymer
* Reactant and product
* Lipid, Carbohydrate, Nucleic Acid, and Protein

**Chapter 2 Video Review**

**Bozeman Biology – Molecules of Life**

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**Bozeman Biology – Water and Life**

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**Bozeman Biology – Acids, Bases, and pH**

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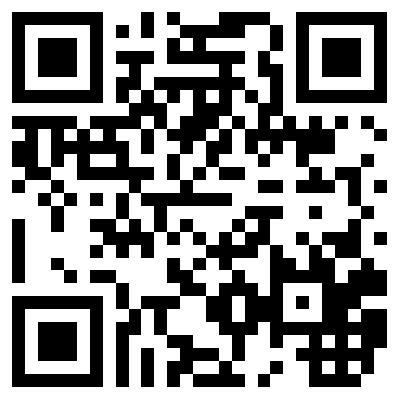
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**Bozeman Biology – Enzymes**

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